



UNITED STATES PATENT AND TRADEMARK OFFICE

un

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,578	10/24/2003	Se-Ho Lee	5649-1194	9027
20792	7590	09/25/2006	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			PHAM, LONG	
PO BOX 37428			ART UNIT	PAPER NUMBER
RALEIGH, NC 27627			2814	

DATE MAILED: 09/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/692,578	Applicant(s) LEE, SE-HO	
	Examiner Long Pham	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 4-10 is/are allowed.
- 6) ☒ Claim(s) 1,3 and 24 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Rejections and/or objections as previously applied

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 1, 3, and 24 as currently amended are rejected under 35 U.S.C. 102(e) as being anticipated by Doan et al. (US publication 2002/0175322).

With respect to claim 1, Doan et al. teach a structure in a phase changeable or chalcogenide memory cell, comprising (see figs. 1-32 and associated text):

A bottom electrode 102 having an interlayer dielectric layer 116 thereon, the bottom electrode having a recess therein that extends beyond a boundary between the bottom electrode and the interlayer dielectric; and

A phase changeable or chalcogenide layer 120 in the recess including a protruding portion of the of the phase changeable layer that protrudes into the bottom electrode beyond the boundary, wherein the phase changeable layer contacts the bottom electrode within the confine of the recess.

With respect to claim 3, Doan et al. further teach the interlayer dielectric layer includes a contact hole with the phase changeable layer therein on the recess. See figs. 1-32 and associated text.

With respect to claim 24, Doan et al. teach a structure in a phase changeable memory cell, comprising (see figs. 1-32 and associated text):

A bottom electrode 102 having an interlayer dielectric layer 116 thereon; and

A phase changeable layer 120 extending through the interlayer and protruding into a recess in the bottom electrode wherein the phase changeable layer contacts the bottom electrode with confines of the recess.

Further with respect to claim 24, Doan et al further teach the bottom electrode defines a sidewall (boundary between the layer 102 and 120) of the recess that contacts the protruding portion of the phase changeable layer 120. See fig. 20 and associated text.

Response to Arguments

Applicant's arguments filed 07/03/06 have been fully considered but they are not persuasive. See below.

In response to the arguments in the bottom paragraph on page 7 and the first paragraph on page 8 of the amendment dated 07/03/06, it is submitted that fig. 20 of Doan shows bottom electrode 102 having a recess (a space in 164 where phase chargeable layer is located) or a recess is in the bottom electrode. Further, it is submitted that rejected claims do not require the recess is formed within the bottom electrode.

Allowable Subject Matter

Claims 4, 5, 6, 7, 8, 9, and 10 are allowed.

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

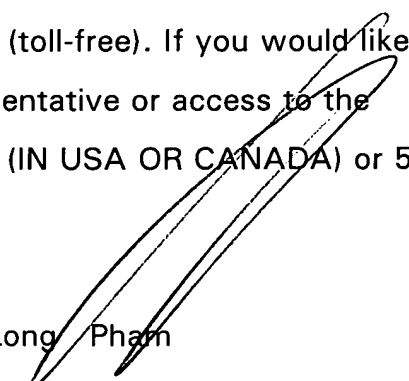
Art Unit: 2814

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on Mon-Frid, 10am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Long Pham
Primary Examiner
Art Unit 2814

LP